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**NHRC CHANGE OF
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NAMRU-SA RESEARCH DENTISTS – INNOVATION TO SUPPORT WARFIGHTER READINESS (COVER)

From Naval Medical Research Unit - Dayton Public Affairs



SAN ANTONIO – Research dentists in the Craniofacial Health and Restorative Medicine Directorate (CH&RM) at Naval Medical Research Unit - San Antonio (NAMRU-SA), continue a strong and proud tradition of dedicating their service to ensure dental readiness and health for service members around the globe by being at the forefront of dental research, science, and innovation.

“NAMRU-SA’s research dentists are ultimately aimed at having a positive impact on the health and readiness of Sailors and Marines through treatment, detection, and prevention of craniofacial disease and injuries,” said Dr. John Simecek, Director, CH&RM.

These research dentists conduct a variety of projects to better provide for the warfighter. “Navy dentists have a long tradition of utilizing research to improve the health of service members dating back to 1947 when the first dental research facility was established at Great Lakes,” said Capt. Jonathan Stahl, Biomedical Research Dentist and Principal Investigator, Biomaterials and Epidemiology Department.

Wound Dressings and Treatment for Specific Bacterial Infections:

“Currently, wound dressings used on the battlefield are traditional bandages to help control hemorrhage but do not actively help in the healing process,” said Stahl.

Stahl and his team are looking into nano-fibrous wound dressings with bioactive factors such as growth factors, antibiotics and other agents to speed up healing and reduce facial scar formation. Ideal management of skin wounds is predicated on the minimization of infection at the site of injury.

Engineers and scientists built an electrospinning device to make dressings using nanofiber technology. Biologically compatible natural and synthetic polymers are dissolved into a solvent along with bioactive agents and spun into a wound dressing using electrical forces. A higher concentration of the electrospun fiber was successful in inhibiting both growth and attachment of *Staphylococcus aureus* bacteria, which is the bacterium that causes staph infections.

“Development of the active antibacterial scaffold presented in this study is critical in providing a platform for a new generation of antimicrobial wound dressings,” said Stahl.

Ongoing projects also include investigations for rapid detection of waterborne pathogens and evaluation of antimicrobial peptides to eliminate microorganisms of military relevance caused by members of the ESKAPE group of pathogens: *Enterococcus*, *Staphylococcus*, *Klebsiella*, *Acinetobacter*, *Pseudomonas*, *Escherichia*....(cont.)

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NEW COMMANDING OFFICER TO CONTINUE RESEARCH EXCELLENCE AT NHRC (FEATURE)

From Naval Health Research Center Public Affairs



SAN DIEGO – Capt. Marshall Monteville assumed command of the Naval Health Research Center (NHRC) from Capt. Rita Simmons during a change of command and retirement ceremony held aboard Naval Base Point Loma, Aug. 17.

Simmons, who is retiring from the Navy after 30 years of service, started her naval career as an aviator before being commissioned into the Medical Service Corps as an aerospace physiologist. She has led NHRC since 2015.

“Serving as NHRC’s commanding officer for the past two years has been an honor,” said Simmons. “The scientists and support staff at this command are unparalleled in their professionalism, expertise, and

dedication. Their commitment to improving the health and readiness of our service members is reflected in the high caliber research they conduct each and every day. Meeting the evolving needs of today’s warfighter is a challenge that demands continual innovation and an agile mindset. The team here has met that challenge head on. I know they will continue to excel under the leadership of Capt. Monteville.”

During Simmons’ tour as commanding officer, NHRC launched a norovirus vaccine clinical trial, brokered a first-of-its-kind research partnership between the Department of Defense (DoD) and Veterans Administration, engaged in more than 300 research collaborations, conducted research operations in approximately 80 countries, oversaw 173 research protocols, and produced more than 180 journal articles.

Monteville, an experienced Navy Medicine researcher and microbiologist, has served in several leadership roles over his 23-year career, including his most recent as the commanding officer of Naval Medical Research Center-Asia, since being fleeted up from executive officer in 2015.

“The Naval Health Research Center has a stellar reputation for conducting exemplary research and I’m honored to be entrusted with command of such a well-respected organization,” said Monteville. “Captain Simmons has done an impressive job as commanding officer over the past two years, paving the way for NHRC’s continued success as a premier scientific institution. I’m looking forward to working with the staff to identify new opportunities that best serve our customers throughout the DoD and improve the health and readiness of our warfighters.”

Monteville takes charge of a command with research activities that span a wide spectrum, from physical readiness to joint medical planning, to wounded warrior recovery and behavioral health interventions, all focusing on the health, readiness, and well-being of U.S. service members and their families....(cont.)

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NAVY UNDERSEA MEDICAL OFFICER AND ANESTHESIOLOGIST TO RESEARCH AT NMRC

From Naval Medical Research Center Public Affairs



SILVER SPRING, Md. – Lt. Cmdr. William “Andy” Cronin received a research grant from the Foundation for Anesthesia Education and Research (FAER) to study at the Naval Medical Research Center (NMRC), July 2017 – July 2018. Cronin, an Undersea Medical Officer and Anesthesiologist at the Walter Reed National Military Medical Center (WRNMMC), Anesthesia Department, is the first active-duty service member to receive this particular FAER grant.

He will be working in the Undersea Medicine Department (UMD) within the Operational and Undersea Medicine Directorate (OUMD) at NMRC. Cronin is working on a non-invasive breath test that can indicate when oxygen exposure transitions from being helpful to

potentially harmful for patients requiring critical care or warfighters in an operational setting using oxygen in extreme environments.

“Inspiring a high partial pressure of oxygen for a prolonged time can lead to lung damage, termed pulmonary oxygen toxicity (PO₂T),” said Cronin.

Cronin’s FAER research will investigate PO₂T as a foundation for more in-depth studies. This work will identify possible early markers and treatments for PO₂T that is relevant to both anesthesia critical care and today’s warfighters.

“Maintaining tissue oxygenation while minimizing lung damage from exposure to toxic levels of oxygen or barotrauma is a difficult balance,” said Cronin. “Without reliable tools to predict the onset or resolution of PO₂T in real time, management of oxygen exposure is largely based on empirical evidence.”

A graduate of the United States Naval Academy, Cronin also holds a dual degree in medicine and business from Dartmouth College. He trained to become an Undersea Medical Officer at the Naval Medical Institute in Groton, Connecticut, he then completed an undersea medicine tour at NMRC from 2011 - 2014.

“The grant would not have been possible without the foundation of the PO₂T work I started in UMD with my co-investigator Dr. Aaron Hall and under the mentorship of Dr. Richard Mahon. I am thankful for the time this grant provides to build on my understanding of PO₂T and the potential roll of breath testing in medicine,” said Cronin.

Cronin isn’t the only person excited about this research opportunity....(cont.)

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INTERNS SUPPORT UNIQUE RESEARCH AT NAVAL MEDICAL RESEARCH UNIT- DAYTON

From Naval Medical Research Center Public Affairs



DAYTON – Over the years, Naval Medical Research Unit - Dayton (NAMRU-D) has offered summer internships to promising students in an effort to maintain a commitment to developing their skills and encouraging them to lend their talents to the advancement of military medical research.

The summer interns included eight undergraduate and graduate students who applied through Oak Ridge Institute for Science and Education (ORISE). They worked in the Naval Aerospace Medical Research Laboratory and the Environmental Health Effects Research Laboratory.

Brett Haynes:

Brett Haynes, a Navy hopeful and a rising junior at Miami University, supported maintenance and engineering in updating 3D models and schematics for the Disorientation Research Device (DRD), known as “the Kraken.” Haynes mentor was Captain Richard Folga, DRD Program Manager, Department Head, Engineering and Technical Support Services Department, NAMRU-SA.

“Being able to observe the mechanical and electrical side of performing maintenance has been amazing,” said Haynes. “It’s an experience that I will continue to reference as I complete my degree in Mechanical Engineering and when I become an active duty Naval Officer”.

Joshua Hughes:

Joshua Hughes, a biology and interdisciplinary neuroscience major at John Carrol University found out about the opportunities at NAMRU-D during an annual job shadowing event at Wright- Patterson Air Force Base. Hughes mentor is Lt. Cmdr. Dustin Huber, Aerospace Physiologist and Department Head, Acceleration and Sensory Sciences.

Over the course of eight weeks, Hughes supported research on motion sickness and spinal disorders which included interviewing researchers, compiling a list of future research projects, and helping with risk management on the Motion Sickness Interactions with Spine Disorders Study (MOSSD) to ensure participant safety.

“Being around aerospace doctors introduced me to different career fields and helped me to understand different terminology which will keep me from becoming overwhelmed in the future,” said Hughes....(cont.)

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SURFACE WARFARE OFFICER SELECTED NAMRU-DAYTON FOR GRADUATE INTERNSHIP

From Megan Mudersbach, Public Affairs Officer, Naval Medical Research Unit- Dayton

DAYTON –Ohio Lieutenant Joshua Roaf, an instructor at the Department of Naval Services at the University of North Carolina at Chapel Hill, selected Naval Medical Research Unit- Dayton (NAMRU-D) to complete a Masters of Professional Science Internship. Roaf served as a graduate intern for the Environmental Health Effects Laboratory at NAMRU-D from May - August 2017

After searching for a unit that would further develop his abilities to serve, he found NAMRU-D.

“NAMRU-D was one of the only places I found where I could conduct inhalation and environmental health research,” said Roaf.



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TACKLING COMMON PROBLEMS: NASA SCIENTISTS AND NSMRL RESEARCHERS

From Naval Submarine Medical Research Laboratory

GROTON, CT. – A three-person team from the Naval Submarine Medical Research Laboratory (NSMRL) traveled to the National Aeronautics and Space Agency (NASA) Johnson Space Center (JSC), Houston, Texas on May 17-19, 2017. Their purpose was to discuss current research regarding the relation between carbon dioxide (CO₂) levels and performance in enclosed working and living environments. Their main host was Dr. Laura Bollweg of the Human Factors and Behavioral Performance (HFBP) Research Division.

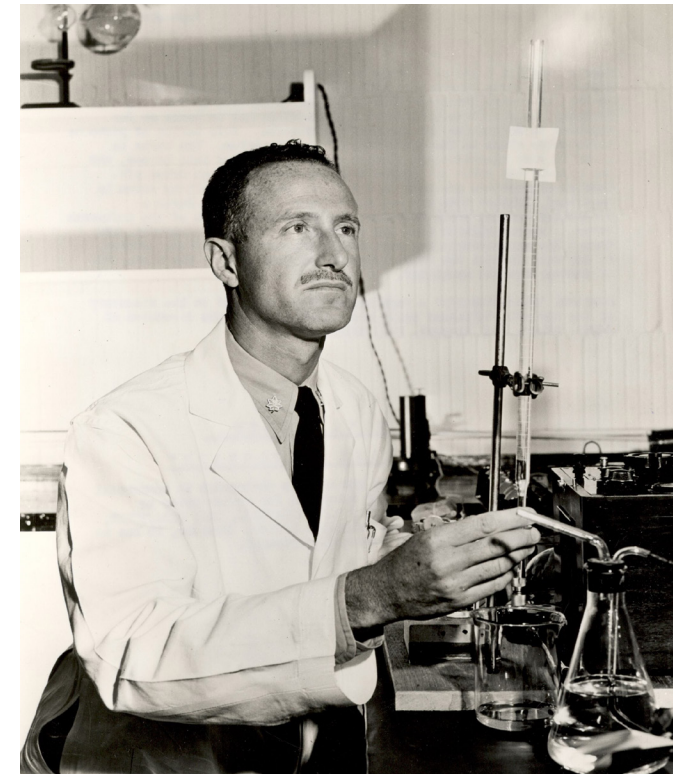
The NSMRL team consisted of Lt. Christopher Rodeheffer (Principal Investigator, Warfighter Performance Dept.), Lt. Cmdr. Jay Haran (Principal Investigator, Warfighter Performance Dept.), and Dr. Ben Lawson, (Technical Director). Lt. Rodeheffer presented results

from a NSMRL study that examined the impact of low-to-moderate levels of ambient CO₂ on cognitive performance of submariners. The presentation was given to the members of the Human Research Program (HRP) Risk Board....(cont.)

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R&D CHRONICLES: DR. KRUEGER AND THE STORY OF THE FIRST NAMRU

By André B. Sobocinski, Historian, BUMED



“...there is a great advantage in having an activity such as this one associated with a large university. The fact that specialists of all sorts on the Faculty are available for consultation from time to time expedites the work of the Unit ...”

~Capt. Albert P. Krueger, MC, USNR, to Vice Adm. Ross McIntire, Surgeon General, March, 1942

On January 31, 1941, the U.S. Navy mobilized a small medical research laboratory on the campus of the University of California at Berkeley under the helm of Capt. Albert Paul Krueger, Medical Corps, United States Naval Reserve (1902-1982). Originally authorized by the Bureau of Medicine and Surgery (BUMED) on October 1, 1934, this Naval Reserve Laboratory Research Unit No. 1, as it was known, had been the brainchild of Krueger – a forward-thinking bacteriologist and expert on respiratory diseases.

Krueger held that communicable diseases, namely influenza, posed a significant health threat for the Navy. After all, Krueger had lived through the deadly Influenza Pandemic of 1918-1919 that killed millions of people across the globe. In 1918 alone, influenza

accounted for 30 percent all naval hospital admissions; the very same year influenza was responsible for 44 percent of all deaths in the Navy. For Krueger the next influenza pandemic could be even more crippling to the Armed Services and directly impact wartime readiness.

Krueger would employ a brain trust of some of Berkeley's finest biomedical specialists—physicians, scientists and technicians, all serving in the Naval Reserve. With the Navy's financial backing, the unit would conduct research, gather information on military medical problems and train military personnel in research techniques.

Through an agreement with the president and regents of the university, the laboratory was established in the Life Sciences Building and consisted of: an office and laboratory for the officer-in-charge; an office for executive officer, statistician and assistants; a serology laboratory; a laboratory for general virus work; a room for autoclaves and normal animal colony; a room for tissue culture work; a room for an infected animal colony; and two rooms for “special equipment” (e.g., magneto-oscillator and cryochem dessicator).

Within the first 14 months of mobilization, the lab had organized a series of studies on epidemic influenza, developed a rapid detection technique for influenza viruses, conducted a monumental study on air-borne infections on Navy and Marine Corps shore stations, prepared emergency stocks of types A and B influenza virus vaccines for use on the West Coast, investigated natural immunity against influenza viruses, and studied the curative properties of chemotherapeutic agents against influenza in laboratory models....(cont.)

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SYMPOSIUM TO ATTRACT RESEARCHERS FOCUSED ON LATEST IN MILITARY MEDICINE

From The Military Health System Communications Office



In one room, doctors and academics talk about the latest developments in treating brain injuries. In another, administrators and clinicians confer about how to best use technology to improve patients' experiences. Over in the corner, a medic and a researcher discuss how to apply lessons from the battlefield to civilian emergency rooms. These scenes and more will be duplicated as thousands of professionals descend on Florida for a unique gathering exchanging the latest information on military medicine. The annual Military Health System Research Symposium takes place in Kissimmee Aug. 27-30, 2017. It's expected to attract military medical providers, academic researchers, clinical administrators, and more.

"This is the only large, broad-based research conference focusing on the unique medical needs of the military," said Dr. Kelley Brix, a physician and division chief with the Defense Health Agency's Research and Development directorate. "It crosses many different research areas and medical conditions."

Some of those unique areas of military medicine to be explored include combat casualty care and traumatic brain injuries. In recent years, the Military Health System reduced fatalities from combat injuries to the lowest levels in the history of warfare through processes developed in the Joint Trauma System, or JTS. Started in 2003, JTS standardized trauma care standards from lessons learned on the battlefields of Iraq and Afghanistan. The Defense Centers of Excellence for Psychological Health & Traumatic Brain Injury advanced the knowledge and practices of the portion of the medical community focused on brain injury. Both groups are expected to be well-represented at the symposium.

"Trauma care is an issue in the general U.S. population," said Brix. "But we see unique problems related to improvised explosive device explosions, gunshot wounds from military-grade weapons, and infections from those traumas not seen in North America."

The information shared at the symposium serves more than just the military community. "Many of the breakthroughs made in the military in improving the care of traumatic injuries have been widely adopted in civilian health care," said Brix.

This year's meeting should attract more than 2,500 people. It's a big increase from when the annual symposium started several years ago, with about 1,400 attending in 2014, outgrowing its former home in Ft. Lauderdale. Brix said the increase in attendance underscores how valuable the information exchanged at the gathering is to the research community.

"Military health scientists clearly think this is really an important conference to go to," said Brix. "It just continues to grow each year."



MILITARY HEALTH SYSTEM RESEARCH SYMPOSIUM 2017

Stories Coming in the September R&D Newsletter

August 27-31, 2017

Gaylord Palms Resort & Convention Center, Kissimmee, FL

#NavyResearch #MHSRS2017



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- [Navy Researchers Study Urogenital Health in Deployed Service Members](#)
- [Navy Scientist from NAMRU-D Presents Findings on Motion Sickness Treatment](#)
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